भारतीय मानक
Indian Standard

IS 720 : 2022

लोकोमोटिव ग्रीस — विशिष्टि

(चौथा पुनरीक्षण)

Locomotive Greases — Specification

(Fourth Revision)

ICS 75.100

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भारतीय मानक ब्यूरो
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March 2022 **Price Group 3**

Lubricants and their Related Products Sectional Committee, PCD 25

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Lubricants and their Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1955, and subsequently revised in 1967, 1974 and 1986. In the second revision IS 721 : 1955 Specification for grease, was also merged with this specification with the result that the title of the specification was changed and IS 721 was withdrawn.

In the third revision the composition of the mineral oil used was changed. Some additional characteristics were incorporated in Table 1 so that the mineral oil used for the manufacture of the grease meets the minimum requirements to ensure a satisfactory quality of the finished grease.

In this fourth revision, viscosity index for all the grades are modified and the consistency of the grade 3 is changed from 200 – 250 to 220 – 250 to align with NLGI 3 grade. Clauses for references, marking and test methods have been updated.

The composition of the committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LOCOMOTIVE GREASES — SPECIFICATION

(Fourth Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and tests for greases, for locomotive journal, rod lubrication and for locomotive lubrication, other than anti-friction bearings.

2 REFERENCES

The following Indian Standards contain provisions which through reference in this text constitute the provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
554 : 1999/ ISO 7-1 : 1994	Pipe threads where pressure-tight joints are made on the threads — Dimensions, tolerances and designation (*fourth revision*)
1447 (Part 1) : 2021	Methods of sampling of petroleum and its products Part 1 Manual sampling (*second revision*)
1448	Methods of tests for petroleum and its products
(Part 2) : 2007/ ISO 6619 : 1988	Petroleum products and lubricants — Neutralization number — Potentiometric titration method (*second revision*)
(Part 4/Sec 1) : 2021/ ISO 6245 : 2001	Part 4/Section 1 Determination of ash (*fourth revision*)
(Part 8) : 2012/ ISO 4262 : 1993	Determination of carbon residue — Rams bottom method (*second revision*)
(Part 25/Sec 1) : 2018/ ISO 3104 : 1994	Transparent and opaque liquids, Section 1 Determination of kinematic viscosity and calculation of dynamic viscosity (*second revision*)
(Part 52) : 2017/ ISO 2176 : 1995	Drop point (*second revision*)
(Part 53) : 1979	Determination of acidity and alkalinity of greases (*first revision*)
(Part 55/Sec 1) : 2004	Determination of saponification value of petroleum products (*first revision*)
(Part 56) : 2013/ ISO 2909 : 2002	Calculation of viscosity index from kinematic viscosity (*third revision*)
(Part 59) : 1991	Determination of mineral oil content in greases (*second revision*)
(Part 60) : 1994	Consistency of lubricating greases by cone penetrometer (*second revision*)
(Part 61) : 1974	Evaporation loss in greases 2 hour drying (*first revision*)
(Part 69) : 2019/ ISO 2592 : 2017	Determination flash and fire points — Cleveland open cup method (*second revision*)
(Part 138) : 2018	Determination of soap content (*first revision*)

3 GRADES

There shall be three grades of the material namely Grade 1, Grade 2 and Grade 3.

4 REQUIREMENTS

4.1 General

4.1.1 The material shall be uniform in consistency and free from objectionable odour and other impurities or deleterious materials. It shall be free from rosin, rosin oil, rosinates, tar oil, grit and fillers of any description.

4.1.2 In case of Grade 1 and Grade 2 greases, the material shall be such that it can be cut into blocks of desired size and shape without having surface cracks or distortion. In case of Grade 3, the material shall be of such a texture that grease guns, when filled with the material, may be readily worked after storage of 6 h at 0 °C. The grease guns shall have 6 mm pipe thread (*see* IS 554). Where pressure-tight joints are made on the thread, grease nipples shall have an orifice diameter of 8 mm.

4.2 Composition

Locomotive greases shall be prepared mainly from soda soap and a suitable blend of mineral oils.

4.3 The material shall also comply with the requirements given in Table 1 when tested according to the methods given in parts of IS 1448, given in col 6 of Table 1.

5 KEEPING PROPERTIES

The material when stored in original sealed containers under normal temperature conditions under shade shall retain the properties described under **4** for a period of not less than one year from the date of manufacture.

6 PACKING AND MARKING

6.1 Packing

The grease shall be supplied in sound, clean and dry metal containers or other suitable packages, as agreed to between the purchaser and the supplier.

6.2 Marking

6.2.1 Material shall be marked with the following information:

a) Name and type of the material;

b) Manufacturer's name, initials or trade-mark, if any;

c) Net mass of material;

d) Identification in code or otherwise to enable the lot of consignment or manufacture to be traced back from records; and

e) Any other statutory requirements.

6.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed in IS 1447 (Part 1).

7.2 Number of Tests

Individual containers selected according to IS 1447 (Part 1) shall be opened and examined for the general requirements given in **4.1**. Tests for consistency shall be carried out on all the individual samples and test for corrosion shall be conducted on three of the individual samples. No failure shall be reported if the lot is to be accepted under this clause.

7.3 Criteria for Conformity

Tests for all the remaining characteristics shall be made on the composite sample and all the test results shall satisfy the corresponding requirements for acceptance of the lot.

Table 1 Requirements for Locomotive Greases

(*Clause* 4.3)

Sl No.	Characteristic	Requirement for			Method of Test, ref to Part of IS 1448
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Sulphated ash, percent by mass, *Max*	13.0	11.5	6.0	(Part 4/Sec1)
ii)	Evaporation loss, percent by mass, *Max*	1.0	1.0	1.0	(Part 61)
iii)	Consistency of unworked grease using penetrometer cone but with 300 g load at 37.8 ºC	30 to 45	46 to 60	–	(Part 60)
iv)	Consistency of the worked grease at 25.0 ± 0.5 ºC (60 double strokes)	–	–	220-250	(Part 60)
v)	Free organic acidity (as oleic acid), percent by mass, *Max*	0.30	0.30	0.30	(Part 53)
vi)	Free alkalinity (as sodium hydroxide) (NaOH), percent by mass, *Max*	0.50	0.50	0.50	(Part 53)
vii)	Drop point, ºC, *Min*	170	170	150	(Part 52)
viii)	Heat stability, percent loss in mass, *Max*	–	–	5.0	(Part 89)
ix)	Copper strip corrosion at 100 ºC for 24 h	Negative	Negative	Negative	(Part 51)
x)	Mineral oil extracted from grease:				(Part 59)
	a) Kinematic viscosity, cSt at 100 ºC	25 to 40	25 to 40	15 to 20	(Part 25/Sec 1)
	b) Flash point, Cleveland (open) Cup, ºC, *Min*	250	250	200	(Part 69)
	c) Viscosity index, *Min*	←	75	→	(Part 56)
	d) Ash, percent by mass, *Max*	←	0.02	→	(Part 4/Sec 1)
	e) Carbon residue (Ramsbottom), percent by mass, *Max*	←	1.5	→	(Part 8)
	f) Saponification value, *Max*	←	1.0	→	(Part 55/Sec1)
xi)	Soap content, percent by mass	43 to 50	35 to 42	–	(Part 138)

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Lubricants and their Related Products Sectional Committee, PCD 25

Organization	*Representative(s)*
Gulf Oil Lubricants India Limited, Mumbai	Dr Y. P. Rao (***Chairman***)
Afton Chemicals Private Limited, Mumbai	Shri Anand Kumar
Ashok Leyland Limited, Chennai	Shri Mahesh P. Shri D. Balakrishnan (*Alternate*)
Automotive Research Association of India, Pune	Dr S. S. Thipse
BASF India Limited, Mumbai	Ms Anju Sharma Shri Ashok Sambandam (*Alternate*)
Bajaj Auto Limited, Pune	Shri K. Rajan Shri Deepesh Mutke (*Alternate*)
Balmer Lawrie and Company Limited, Kolkata	Dr Mohan Lal Das Shri Srinivasan Murali (*Alternate*)
Bharat Heavy Electrical Limited, New Delhi	Representative
Bharat Petroleum Corporation Limited, Mumbai	Shri R. Subramanian Dr Tarunender Singh (*Alternate*)
Bosch Limited, Bengaluru	Shri Fredrick A. Shri Raghuveer Rao (*Alternate*)
Castrol India Limited, Mumbai	Shri Ashish Gondal Shri Raman Rai (*Alternate*)
Central Pollution Control Board, New Delhi	Shri Dinabandhu Gouda
Centre for High Technology, New Delhi	Shri P. Raman Dr N. S. Raman (*Alternate* I) Shri Shekar Kulkarni (*Alternate* II)
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Defence Research and Development Organization, Research Centre Imarat, Hyderabad	Shri Kamal Prakash Singh Shri Sonam Gupta (*Alternate*)
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Food Safety and Standards Authority of India, New Delhi	Representative
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Hindustan Petroleum Corporation Limited, Mumbai	Shri Lokender Singh Tevathiya Shri Ashish Khanna (*Alternate*)
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Organization	*Representative(s)*
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Indian Institute of Petroleum, Dehradun	Dr Anil Kumar Sinha Dr G. D. Thakre (*Alternate* I) Shri Sailesh Kr Singh (*Alternate* II)
Indian Oil Corporation (MKTG), Mumbai	Shri Rajesh Nambiar Shri S. Venkatesan (*Alternate*)
Indian Oil Corporation (R and D Centre), Faridabad	Dr Deepak Saxena Dr Pankaj Bhatnagar (*Alternate*)
Indian Oil Corporation Limited-Refineries and Pipelines Division, New Delhi	Shri Ashwani Sharma Shri R. K. Chugh (*Alternate*)
Indian Oil Corporation Limited, Mumbai	Shri Sanjeev Kundu
Indian Sugar Mills Association, New Delhi	Shri G. K. Thakur
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Oil Industry Safety Directorate, Noida	Representative
Petroleum Conservation Research Association, New Delhi	Representative
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Research Designs and Standards Organization (RDSO), Lucknow	Shri Kamal Prakash Singh Shri Rajesh Srivastava (*Alternate*)
S S Industrial Corporation, Delhi	Shri T. S. Sethi
Society of Indian Automobile Manufacturers (SIAM), Delhi	Shri Prashant Kumar Banerjee Dr Sandeep Garg (*Alternate*)
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Tata Motors Limited, Pune	Shri Pallipalayam Gowrishankar
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Member Secretary

Shri Aridaman
Scientist ‘B’, PCD, BIS

Automotive and Industrial Greases Subcommittee, PCD 25 : 3

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Bharat Petroleum Corporation Limited, Mumbai	Dr Tarunender Singh (***Convener***)
Ashok Leyland Limited, Chennai	Representative
Association of State Road Transport Undertakings, New Delhi	Representative
Bajaj Auto Limited, Pune	Representative
Balmer Lawrie and Company Limited, Kolkata	Representative
Bharat Petroleum Corporation Limited, Mumbai	Shri Vishal Kumar Sinha (*Alternate*)
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